# Division of Remediation

## Division of Remediation—Our Charge

The Division of Remediation (DoR) is charged by the Commissioner of the Department of Environment and Conservation to implement the Hazardous Waste Management Act of 1983, Part 2 (TCA 68-212-201 et seq.), Property Where Methamphetamine Manufactured (TCA 68-212-501 et seq.), and the Drycleaner's Environmental Response Act (TCA 68-217-101 et seq.). DoR uses the Hazardous Waste Remedial Action Fund (the "Fund"), the Voluntary Cleanup Oversight and Assistance (VOAP) Fund, and the Drycleaner's Environmental Response Fund to investigate and clean up environmental problems caused by the release of hazardous substances into the environment. Each Act directs the process for fee collection with fees deposited into each fund. Each Act also specifies how fund revenues may be used by TDEC. DoR is responsible for properly managing expenditures from these funds.

## Our Purpose and Function

DoR identifies and investigates hazardous substance sites, then uses practical and effective remedies to stabilize, remediate, contain, monitor and maintain these sites. These efforts minimize chemical and radiological threats to public health, safety, and the environment. Inactive hazardous substance sites include:

- Promulgated Hazardous Substance sites;
- Brownfield and Voluntary sites;
- Drycleaner Program sites;
- Environmental Protection Agency National Priority List sites;
- Department of Defense sites;
- Department of Energy sites including Oak Ridge; and
- Other sites that may pose a threat to human health or the environment.

DEPARTMENT OF ENVIRONMENT & CONSERVATION

DIVISION OF REMEDIATION

Inside this Report



## Annual Legislative Report For July 1, 2013 - June 30, 2014

The purpose of this annual report is to account for expenditures from the Hazardous Waste Remedial Action Fund from July 1, 2013 through June 30, 2014 as required by TCA 68-212-212.

# FY 2013 - 2014 Performance Measures

The Division of Remediation utilized the Remedial Action and VOAP funds to:

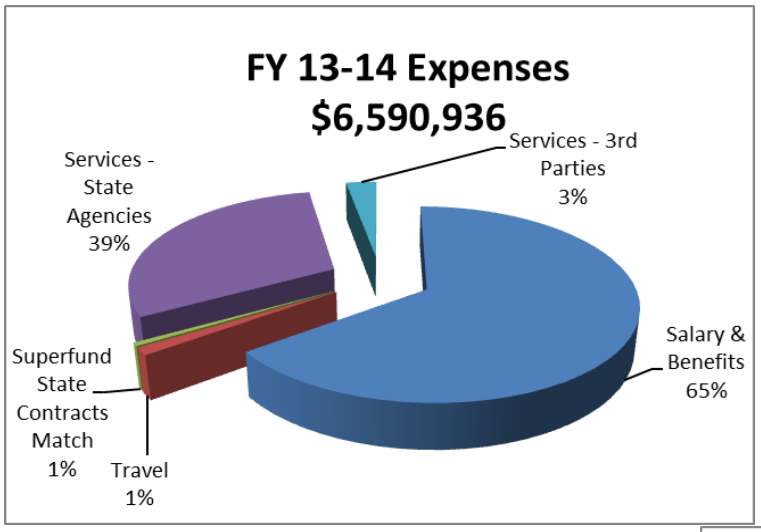
⇒ Complete remediation at sixteen hazardous substance sites

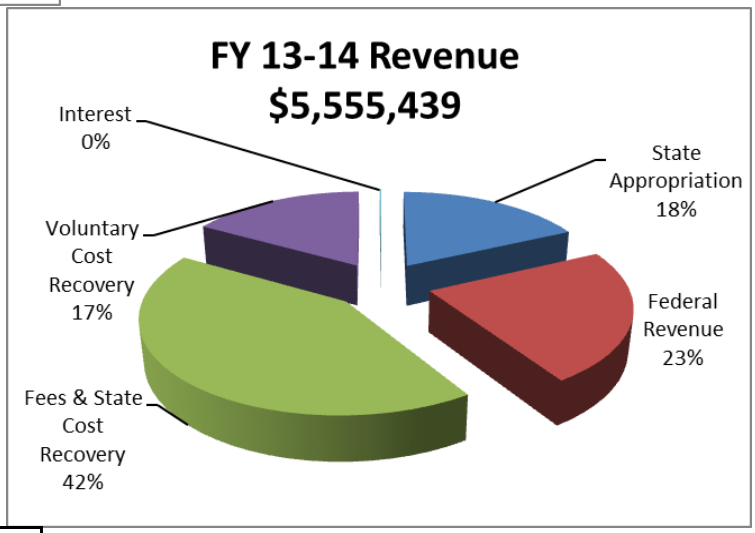
⇒ Continue the progress of investigation and cleanup at 908 sites (in 83 counties)

In addition, responsible parties at 51 sites reported:

- Spending in excess of $19,637,643
- Treating or disposing 7,903,395,523 gallons of water or groundwater
- Removing, treating, or disposing of 14,830 pounds of hazardous waste/ hazardous substances.

# Hazardous Waste Remedial Action Fund FY 2013 - 2014

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|---|---|---|
| **Fund Balance - July 2013** | | **$6,430,669** |
| **Revenues** | **$5,555,439** | |
| **Expenses** | **$6,590,936** | |
| **Decrease in Fund Balance** | | **($1,035,497)** |
| **Fund Balance - June 2014** | | **$5,395,172** |

# Brownfields Program

Integral components of DoR are the Voluntary Cleanup Oversight and Assistance Program (VOAP), which is Tennessee's state response under the Small Business Liability Relief and Brownfields Revitalization Act, and the State Remediation Program (SRP). These programs were established to provide the opportunity for willing and able parties to work with the Division to address real or perceived contamination issues that are hindering the redevelopment of properties. In return for their efforts, participants may receive a "No Further Action Required" letter and a release of liability for those areas where investigation and cleanup is conducted. The programs are open to anyone, including local governments and private developers that have an interest or need to address contamination at a site. Eighty-nine new sites entered the programs in 2013-2014.

The Division also promotes and supports the EPA Brownfields Assessment, Cleanup and Revolving Loan Fund grants in Tennessee. In 2014, a $400,000 Community Wide Assessment Grant was awarded by EPA to Campbell County to assess properties hindered by actual or perceived contamination. In addition, a $200,000 Environmental Workforce Development and Job Training Grant was awarded by EPA to The Memphis Bio-Works to recruit, train and place low-income residents who are unemployed or under-employed with the skills needed to secure full-time sustainable employment in the environmental field. TDEC's Brownfields Program provided technical assistance to current EPA Brownfields Grantees in the cities of Knoxville, Chattanooga, and Union City.

**Rolling Mill Hill, Nashville**

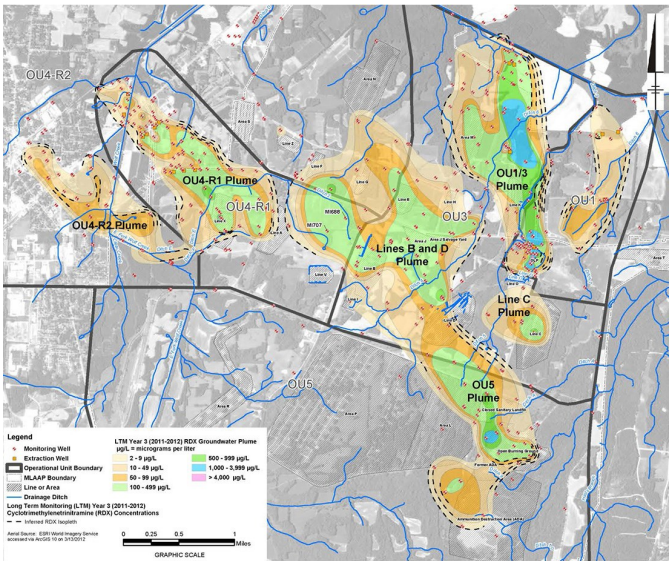
# Dry Cleaner Environmental Response Program (DCERP)

The Drycleaner Environmental Response Program (DCERP) through the Drycleaner's Environmental Response Act is responsible for managing drycleaner facility registration and environmental response activity at impacted sites. Annual registration fees and solvent surcharges make up the Drycleaner Environmental Response Fund. The Fund allows for investigation and remediation of releases at eligible facilities. Qualifying businesses or individuals can participate in the voluntary DCERP Environmental Response Activity (ERA) by completing and submitting an application to the program. Currently, there are approximately 300 registered drycleaners in Tennessee and 60 sites that are participating in ERA under the program.

# Site Accomplishments and Successes

## Milan Army Ammunition Plant (MAAP)

The MAAP site recently was awarded both the Secretary of the Army Environmental Award honorable mention and the Army Material Command Environmental Award for restoration. The site-wide Ground Water Record of Decision (ROD) was recently signed by the EPA, the Department of Defense, and TDEC. The chosen alternative is described as Optimization/Extension of Current Extraction Systems and Monitored Natural Attenuation (including Land Use Controls) and focuses on active remediation in select areas based on a remediation timeframe of 60 years. This timeframe includes 15 years of estimated active remediation followed by attenuation for the remaining 45 years or until target concentrations are reached. Finally, this Site-wide groundwater ROD will replace individual and interim RODs previously in place for individual operable units at Milan AAP.




## Publix Brownfields Redevelopment—Chattanooga

The Publix on North Market Street in Chattanooga is a brownfield redevelopment that recently opened. The completion of a full service grocery store in the North Shore neighborhood provides convenient access to a community that previously had to drive several miles out of the area for grocery shopping. The site was impacted with petroleum constituents and foundry sand from previous tenants. The developer worked with the Division to properly segregate and manage the impacted materials during the early intrusive stages of construction.

The grocery store not only makes life easier for nearby residents but is also seen as a lynchpin project to redeveloping and revitalizing the surrounding neighborhood. The site was home to the Freudbenburg's Grocery Store from the early 1900's until the mid-1940's. Publix, the city of Chattanooga, and the North Shore Merchants Collective worked closely together and with residents to ensure that the store would fit seamlessly into the community and to garner public support. The new building is designed to be more reflective of the area's history and to promote the pedestrian-friendly nature of the retail district. The community is now seeing a boost in plans for the additional redevelopment of historical neighborhood buildings.

# Site Accomplishments and Successes (continued)

## First Tennessee Baseball Park—Sulphur Dell, Nashville

April 16, 1969 was a sad day for the city of Nashville as the Sulphur Dell Ball Park demolition began and professional baseball in Nashville would become a memory. Although reports say that baseball in the area may have started as early as 1857, Union soldiers taught citizens to play the "northern game" of baseball during the Civil War in the Sulphur Springs Bottom recreational area. In 1870, the area became known as Athletic Park, and in 1885 Nashville's first professional baseball team, the Americans, started playing. In 1908, the famous sportswriter Grantland Rice renamed the ballpark, "Sulphur Dell" and the name has stuck ever since. From 1885-1969 the park was home to the Americans, Blues, Tigers, Seraphs, Vols, Centennials, and the Negro League Elite Giants. Most notable Hall of Famers once graced the diamond there, including Cy Young, Babe Ruth, Lou Gehrig, Rogers Hornsby, Joe DiMaggio, Ted Williams, Mickey Mantle, Jackie Robinson, Connie Mack, Casey Stengel, Duke Snider, Roy Capanella, Yogi Berra, Hank Aaron, and many more. As sportswriter Fred Russell wrote, "Sadness and nostalgia marked the throwing of the last ball at Sulphur Dell. At no other plot of ground in America had professional baseball been played as long."

Currently, construction of a new baseball park is underway on these hallowed grounds that will house the Nashville Sounds Triple-A affiliate of the Oakland A's. TDEC staff from both the Division of Remediation and Division of Solid Waste Management provided technical guidance and field oversight to Metro Nashville in the development of a remedial strategy for the site where former industrial use properties are being transformed. The development of the new Nashville Sounds ballpark has spurred additional residential and commercial redevelopment activity in the adjoining neighborhood. In the spring of 2015 it will again be time to "Play Ball" in historic Sulphur Dell.

# Site Accomplishments and Successes Stories (continued)

## The Next Door—Nashville

In 2012, The Next Door Nashville entered the Division of Remediation's VOAP/Brownfields program to address a property for a new facility to expand their services as a residential treatment facility for women. Prior to entering the program, the prospective purchasers conducted due diligence that indicated the presence of metals and volatile organic compounds from onsite and offsite historical activities. Under a Brownfields Voluntary Agreement, a plan was developed to address the contamination and eliminate potential exposures. Following successful implementation, groundbreaking for the new facility occurred in September of 2013. The Next Door provides recovery support services for women with an addiction to alcohol, drugs, and/or co-occurring mental illness. The center provides many other services including workforce development.

## West Riverfront Park—Nashville

The new West Riverfront Park is currently under construction and is located on the former sites of the Nashville Thermal Treatment Plant, a Metro police station, and a former service station. Site investigations revealed petroleum and metals contamination. Approximately 163 tons of contaminated soils have been removed from the site and the remaining contamination was capped with a suitable soil cover. The new development will allow for both the maintaining of these barriers and the site's productive reuse.

The site is being revitalized into a multi-use park, amphitheater and walking/biking path that will connect to Nashville's greenway system and merge two existing greenways through downtown, creating a continuous paved trail more than 5-1/2 miles in length. The amphitheater will accommodate up to 6,500 people, all within a natural bowl providing optimal lines of sight to the stage and downtown. Supporting structures include restrooms, concessions, first aid and sound control for events. The facility is being built to LEED Silver certification. Sustainable features include geothermal heating and cooling, green roofs, solar power and rainwater collection. The amphitheater facility itself is approximately 35,000 square feet and includes a stage designed to accommodate multiple forms of performance events and musical genres, including country, rock and symphonies, as well as community events.

# Site Accomplishments and Successes (continued)

## Lenoir City Car Works

The Lenoir City Car Works site consists of approximately 100 acres located in the southern portion of Lenoir City, Tennessee. The facility operated from 1907 through 1985, manufacturing rail cars and their components. Operations included ferrous (iron) and nonferrous (brass) foundries.

During the operational history of the Car Works site spent foundry sand was disposed of on the ground over a majority of the 100 acre parcel, ranging in thickness from a few inches to over ten feet. Hazardous substances identified on the site primarily include arsenic and lead associated with the foundry sand and slag. Both lead and arsenic are present at concentrations of concern for either a residential or industrial future use scenario.

The Norfolk Southern Railway Company and their affiliate, Southern Region Industrial Realty, developed a remedial strategy for addressing the widespread contamination with a plan to consolidate the foundry sand and contaminated soil under an Engineered Cover System (ECS) onsite. Actual remediation activities began in July 2012 on a smaller eleven acre portion of the eastern part of the site. During remediation of the Eastern Parcel, approximately 18,000 cubic yards of foundry sand/soil were excavated and staged on the main parcel for placement under the ECS. Remediation of the remainder of the site began in May 2013. To date, approximately 300,000 cubic yards of foundry sand/soil have been excavated and placed in one of two onsite cells. Remediation activities at the site are set to be completed around mid-October 2014. Approximately 50 to 60 acres of the original 100 acres will be available for future industrial development.

# Site Accomplishments and Successes (continued)

## Knoxville College

On June 4, 2014, personnel from a sister division requested assistance in verifying the location and status of a radioactive source at Knoxville College. They had been unable to contact Knoxville College personnel to verify the current disposition of the source and feared the device might be unsecured. On June 5, 2014, DoR employees traveled to Knoxville College to ascertain the status of the radioactive source. Upon entering the campus, DoR personnel found an individual who was aware of the radioactive source and indicated it was located in the A.K. Stewart Science Building.

DoR personnel entered the three story structure and began to look for the device. Almost immediately it became clear that numerous issues existed within the structure. The structure had many water leaks, broken windows, no electricity, etc. As the building was searched, thousands of containers of chemicals were found. Many of these containers had breached or were in very poor condition. Incompatible storage of poisons, oxidizers, and corrosives were apparent in numerous locations. Some chemicals were water reactive which posed a potential hazard due to the numerous leaks and standing water in the building. Vandals had obviously entered the building and caused damage to the chemical containers. Cyanides and acids in degrading containers were stored in close proximity resulting in a potential for cyanide gas to be released. Volatile, flammable, and potentially explosive chemicals were degrading as a result of lack of temperature and humidity control.

Due to the imminent nature of the hazard, DoR contacted EPA Emergency Response and Removal Branch and asked for assistance. EPA responded the same day and equipment was mobilized to begin the elimination of the immediate hazard. Over the next month chemicals and radioactive material were removed from the building, staged and eventually transported for disposal.

# Committed and Anticipated Uses of the Fund

The Hazardous Waste Remedial Action Fund has historically funded the State match on EPA Fund Lead National Priority List (NPL) sites. A number of EPA Fund Lead sites are ongoing or anticipated in the very near future. Therefore it is anticipated that significant resources from the Hazardous Waste Remedial Action Fund will be required not only to support ongoing program activities but to also cover State matches on EPA Fund Lead NPL sites.

# Superfund State Contracts (SSCs)

Investigation and remediation of sites listed on the U. S. Environmental Protection Agency (EPA) National Priority List (NPL) may be financed by either the Potential Responsible Party (PRP), or in some cases by the EPA. Except for a special case where either the State or a political subdivision of the State operated the site during disposal of the waste, EPA finances 100% of the investigation of EPA-financed NPL sites. After investigation, remedy selection, and remedial design are complete, Federal law requires that for sites financed by Federal funds, the EPA and the State effectuate a Superfund State Contract (SSC) prior to EPA obligating or expending funds for remedial action. The SSC must include the percentage of the remedial action financed by EPA (typically 90%) and by the State (typically 10%), and other assurances, such as the State committing to finance 100% of operation and maintenance (O&M) for as long as O&M is needed.

*"The President shall not provide any remedial action…unless the state in which the release occurs first enters into a contract or cooperative agreement with the President providing assurances…" CERCLA § 104(c)(3)*

An SSC is a joint, legally binding contract between the EPA and a State and is enforceable in federal court. The Department of Environment and Conservation reports estimated costs in Government Accounting Board Standard 49 (GASB 49) reporting for SSCs and anticipated SSCs. The Department strives to manage and budget State obligations for SSCs through the Hazardous Waste Remedial Action Fund. Two Federally financed NPL sites are described below that the Department has negotiated SSCs with EPA.

## Smalley-Piper NPL Site

The Smalley-Piper Site is approximately nine acres in size and is located in Collierville, Shelby County, Tennessee. The Site is comprised of a self-storage facility, concrete buildings, metal storage buildings, a vacant lot and a paved parking area. From the 1950's to the 1980's, various industrial activities, including magnesium battery casing manufacturing, were conducted at the site. The battery casing treatment utilized caustic soda, acetic acid, chromium acid and water. The wastes generated from facility operations were treated in unlined on-site equalization ponds with liquid sulfur dioxide. However, the waste in the ponds received inadequate treatment resulting in the contamination of soils, surface water, and groundwater in the Memphis aquifer in the vicinity of the Site, culminating with the shutdown of the nearby Water Plant #2 (Collierville) in December 2003. These on-site equalization ponds were closed in the early 1980s and all on-site operations at the facility ceased in 2007.

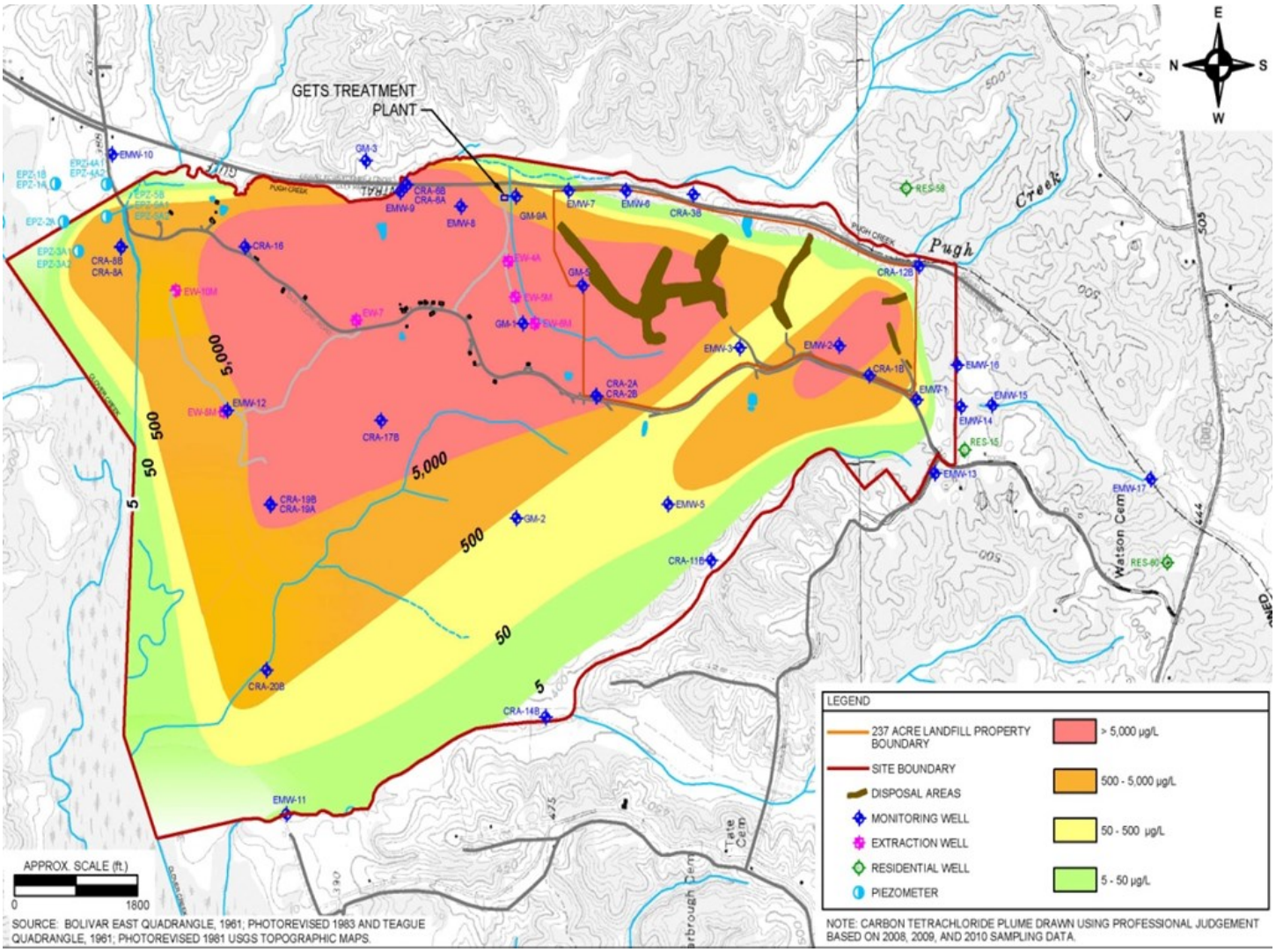
The amended SSC addresses the previously implemented soil remedy and adds a soil flushing component. The amended SSC has a total current estimated cost of $7,781,970, with the State's 10% match being $778,197. EPA will invoice TDEC annually for the state's 10% match based on their expenses for the prior federal fiscal year. No operation and maintenance (O&M) other than institutional controls is anticipated for this remedial action. The intent of the soil flushing remedy is to reduce the contaminant concentrations that remain in subsurface soil which may continue to leach into groundwater.

Water is extracted by onsite recovery wells and will be treated by chemical reduction, precipitation and ion exchange treatment modules. The treated water will then be re-injected into the former source area via the infiltration gallery. It is anticipated that the system will operate for one year with the goal for completion of the remedy by July 31, 2015.

# Velsicol Hardeman County Landfill NPL Site

According to reports, approximately 130,000 to 300,000 drums of waste containing pesticides, carbon tetrachloride and other pollutants were disposed of in ten to fifteen foot deep, unlined trenches at the Velsicol Hardeman County Landfill site near the town of Toone, Tennessee. Most of the burial trenches have been capped. Erosion of the cap and exposing of the waste in the trenches could create an imminent and substantial danger. Around 2003, a Groundwater Extraction and Treatment System (GETS) was determined ineffective and was discontinued in order to evaluate other remedial alternatives. Additional pilot studies have shown that soil vapor extraction along with access restrictions, cap extension and cap maintenance should be effective in controlling the source area. Additionally, the remedy is expected to reduce surface water, air and groundwater pollution by removing an estimated 5,000,000 to 6,000,000 pounds of carbon tetrachloride and other volatile organic compounds.

During September 2014, The Department negotiated two SSCs with the EPA on the Velsicol Hardeman County Landfill, with combined capital costs and remedial action treatment and monitoring costs of $55,378,775. EPA will fund 90% of these costs and the State will fund the remaining 10% (about $5,537,877). The State portion will be broken down into an initial $1,000,000 payment due in December 2014 and seventeen annual payments of $255,159 plus approximately $200,162 for cap extension and maintenance. The Department is committed in the SSC to inspect, mow, and maintain the CERCLA-funded remedial action cap and repair the landfill fence throughout its expected life. The soil vapor extraction SSC also includes a monitoring component to help understand whether additional future remedial actions will be needed.



# Oak Ridge Reservation

The United States Department of Energy's (DOE) Oak Ridge Reservation (ORR) includes the East Tennessee Technology Park (formerly known as K-25), the Y-12 National Nuclear Security Complex (Y-12), Oak Ridge National Laboratory (ORNL) and other areas of operations and waste disposal. The ORR is listed on both the United States Environmental Protection Agency's (EPA) National Priority List (NPL) Site and the Tennessee promulgated hazardous substance site list. During the early 1990s, DOE, EPA and the Tennessee Department of Environment and Conservation (TDEC) executed a Federal Facility Agreement (FFA) that provides a framework for these agencies to address ORR. In addition, the Tennessee Oversight Agreement (TOA) signed between DOE and the State, allows TDEC to monitor both the environment and on-going activities on the ORR as well as the surrounding communities. This independent oversight provides the State and local citizens with a better understanding of potential impacts associated with the reservation.

During 2013-2014, DOE completed demolition of above ground structures at the K-25 Gaseous Diffusion Plant. During the final stages of the demolition an extremely mobile radioisotope, Technetium 99 ($^{99}$Tc), escaped into the environment. As a result the sludge at the Rarity Ridge Wastewater Treatment Plant became contaminated with $^{99}$Tc. DOE is currently providing offsite treatment and disposal of this sludge.

A number of challenges still exist for the three agencies to address on the ORR. For example; ORNL routinely used shallow land burial of both liquid and solid radioactive and hazardous wastes from 1943 to 1986; the earliest burials were in unlined trenches and auger holes. Between the mid-1950s through the early 1960s the Atomic Energy Commission designated ORNL's solid waste areas as the *Southern Regional Burial Grounds*, resulting in over 50 offsite isotope users to send wastes to Oak Ridge. These wastes included high inventories of short-lived radioactive waste and lesser amounts of long-lived radionuclides. In Melton Valley the ORR used four high-pressure deep wells, also known as hydrofracture wells, injecting two wells with additional radioactive wastes and using the other two for experimental purposes. ORNL used the hydrofracture wells until 1982. These issues make cleanup of the waste areas complex and require ongoing evaluation and planning between all of the involved agencies and the community.

Numerous cleanup issues remain at ORR including, but are not limited to:

- Establishment of wastewater capture and treatment to prevent additional release of mercury during the scheduled demolition of the West End Mercury Area and other mercury contaminated areas at Y-12.
- Mercury in East Fork Poplar Creek downstream of Y-12 and in fish tissue.
- Decisions on future radioactive and mixed waste disposal at ORR.
- Further investigation of offsite groundwater surrounding the ORR.

# Methamphetamine Program

The abuse of methamphetamine has reached epidemic proportions in Tennessee, consistently placing the state in the top five nationwide for methamphetamine lab seizures. Methamphetamine may be manufactured at properties ranging from single-family homes, rental properties, hotel and motel rooms, recreational vehicles, and automobiles. This illegal drug-manufacturing process may leave behind potentially hazardous residual contamination that pose or may pose a threat to human health and render a property "Unsafe for Human Use." Residual contamination can be found adsorbed onto a variety of surfaces within the home and permeated into walls, carpets, drapes, bedding, furniture, appliances, clothing and toys. By definition, methamphetamine is not a hazardous substance and funds from the Hazardous Waste Remedial Action Fund are not used to support TDEC responsibilities under the Property Where Methamphetamine Manufactured Act. TDEC utilized limited federal funding and the Voluntary Oversight and Assistance Fund to support these activities.